



# Volunteer Lake Assessment Program Individual Lake Reports

## SUNRISE LAKE, MIDDLETON, NH

### MORPHOMETRIC DATA

Watershed Area (Ac.):	2,112	Max. Depth (m):	4.1	Flushing Rate (yr <sup>-1</sup> )	2	Year	Trophic class	KNOWN EXOTIC SPECIES
Surface Area (Ac.):	257	Mean Depth (m):	1.9	P Retention Coef:	0.71	1977	OLIGOTROPHIC	Variable Milfoil
Shore Length (m):	5,500	Volume (m <sup>3</sup> ):	1,966,000	Elevation (ft):	666	1990	MESOTROPHIC	

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

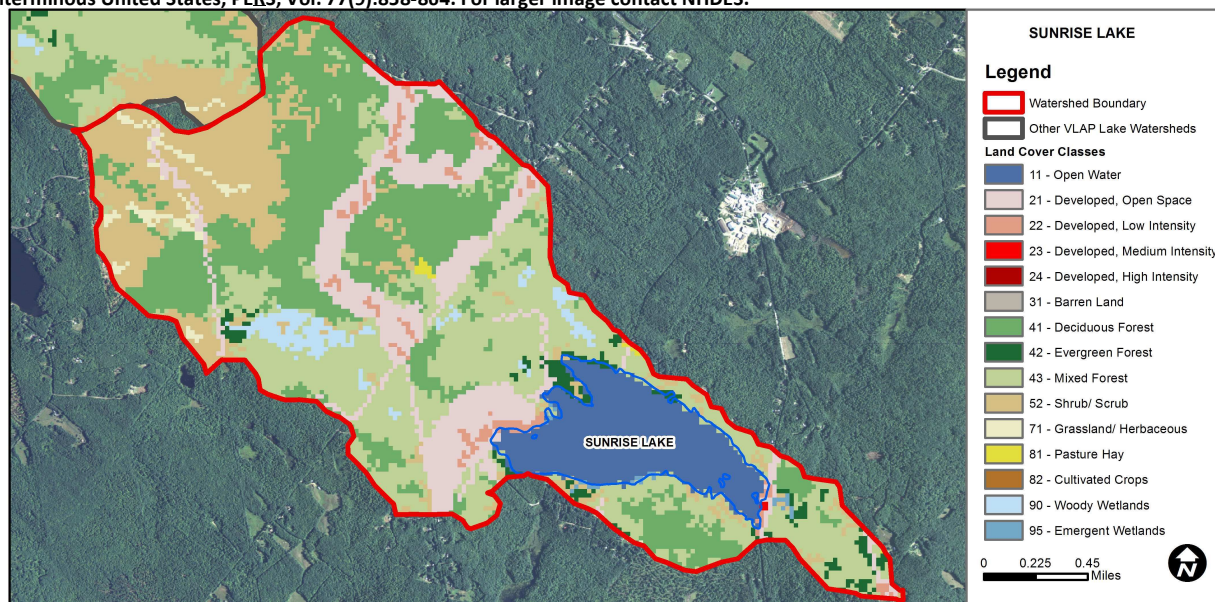
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Slightly Bad	>/=5 samples and median is >threshold.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	D.O. (mg/L)	Cautionary	< 10 samples and 1 exceedance of criteria. More data needed.
	D.O. (% sat)	Cautionary	< 10 samples and 1 exceedance of criteria. More data needed.
	Chlorophyll-a	Slightly Bad	>5 samples and median is > threshold.
Primary Contact Recreation	E. coli	Good	Geometric means < criteria; however at least 1 exceedance of the single sample criteria occurred.
	Chlorophyll-a	Very Good	At least 10 samples with 0 exceedances of criteria.

### BEACH PRIMARY CONTACT ASSESSMENT STATUS

SUNRISE LAKE - TOWN BEACH	E. coli	Bad	>/=1 exceedance(s) of geometric mean criterion and/or >/=2 exceedances of single sample criterion, with 1 or more >2X criteria.
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### WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	10.2	Barren Land	0	Grassland/Herbaceous	1.14
Developed-Open Space	13.2	Deciduous Forest	27.25	Pasture Hay	0.2
Developed-Low Intensity	1.75	Evergreen Forest	2.04	Cultivated Crops	0
Developed-Medium Intensity	0.04	Mixed Forest	26.96	Woody Wetlands	2.24
Developed-High Intensity	0	Shrub-Scrub	14.68	Emergent Wetlands	0.28



# VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

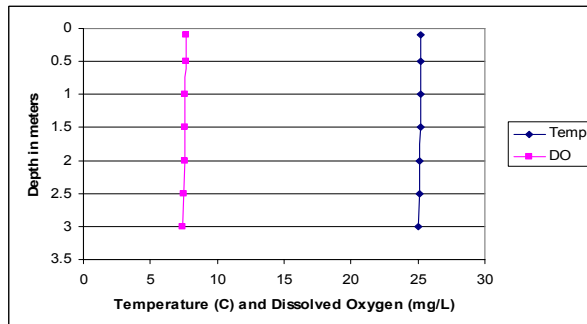
## SUNRISE LAKE, MIDDLETON, NH

### 2012 DATA SUMMARY

#### OBSERVATIONS AND RECOMMENDATIONS (Refer to Table 1 and Historical Deep Spot Data Graphic)

- 🔥 **CHLOROPHYLL-A:** Chlorophyll levels were consistent with 2011 and slightly less than the NH lake median.
- 🔥 **CONDUCTIVITY/CHLORIDE:** Conductivity and chloride were slightly elevated and greater than the NH lake medians.
- 🔥 **E. COLI:** E. coli levels were well below state standards for public beaches and surface waters.
- 🔥 **TOTAL PHOSPHORUS:** Deep spot phosphorus levels have decreased greatly from 2010 and 2012 levels were below the NH lake median. We hope to see this continue.
- 🔥 **TRANSPARENCY:** Transparency has increased slightly since 2010 and we hope to see this continue.
- 🔥 **TURBIDITY:** Deep spot turbidity was relatively low.
- 🔥 **pH:** pH levels were sufficient to support aquatic life, however historically have been below desirable ranges.
- 🔥 **RECOMMENDED ACTIONS:** Increase monitoring frequency to three times per summer to better assess shifts in summer water quality and historical trends. Discontinue Hypolimnion (lower water level) monitoring as the lake is not thermally stratified into distinct layers.

#### Dissolved Oxygen & Temperature Profile



Station Name	Table 1. 2012 Average Water Quality Data for SUNRISE LAKE									
	Alk.	Chlor-a	Chloride	Cond.	E. Coli	Total P	Trans.		Turb.	pH
	mg/l	ug/l	mg/l	uS/cm	#/100ml	ug/l	m		ntu	
							NVS	VS		
Deep Epilimnion	5.7	3.86	12	78.4		7	2.47	2.80	1.29	6.80
Deep Hypolimnion				78.4		6			1.35	6.71
Main Beach					4					
Nicola Beach					2					
Nicola Beach 1					2					

**NH Median Values:** Median values for specific parameters generated from historic lake monitoring data.

**Alkalinity:** 4.9 mg/L

**Chlorophyll-a:** 4.58 mg/m<sup>3</sup>

**Conductivity:** 40.0 uS/cm

**Chloride:** 4 mg/L

**Total Phosphorus:** 12 ug/L

**Transparency:** 3.2 m

**pH:** 6.6

**NH Water Quality Standards:** Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.

**Chloride:** < 230 mg/L (chronic)

**E. coli:** > 88 cts/100 mL – public beach

**E. coli:** > 406 cts/100 mL – surface waters

**Turbidity:** > 10 NTU above natural level

**pH:** 6.5-8.0 (unless naturally occurring)

#### HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation
Chlorophyll-a	N/A	Ten consecutive years of data necessary for trend analysis.
Transparency	N/A	Ten consecutive years of data necessary for trend analysis.
Phosphorus (epilimnion)	N/A	Ten consecutive years of data necessary for trend analysis.

This report was generated by the NH DES Volunteer Lake Assessment Program (VLAP). For more information contact:  
Sara Steiner  
PO Box 95  
Concord, NH 03302-0095  
(603) 271-2658  
sara.steiner@des.nh.gov



#### Historical Deep Spot Chlorophyll-a, Epilimnetic Total Phosphorus & Transparency Data

